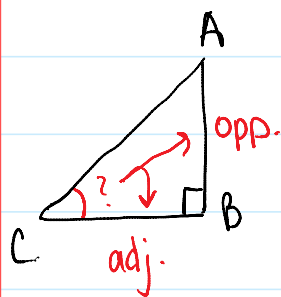irect measurement : use a measuring instrument to determine a length or $\angle$

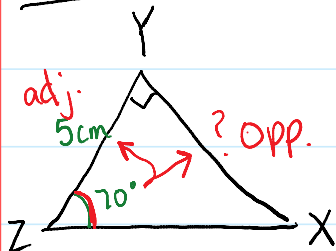<u>indirect</u> measurement: use mathematical measuring to calculate length or $\angle$

** using this method **

→ in a right triangle, we can use the tangent ratio to write an equation

↳ $\angle$ acute angle + 1 of the lengths = solve for the missing length

$$\tan \angle = \frac{opp}{adj}$$

<u>Ex. #1</u> Determine the length of XY
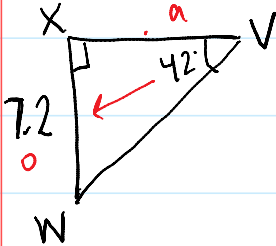

$$\tan (70°) = \frac{opp}{adj} = \frac{x}{5}$$

$\tan 70 \overset{\times 5}{=} \qquad \times 5 \leftarrow$

$$\tan 70^{\times 5} = \frac{x}{5}^{\times 5} \leftarrow$$

$$5 \cdot \tan 70 = x$$

$$\boxed{13.7 \text{ cm} = x}$$

Ex. #2 Determine the length of VX

$$\tan(42) = \frac{o}{a} = \frac{7.2}{x}$$

$$x \cdot \tan 42 = \frac{7.2}{x} \cdot x$$

$$\frac{x \cdot \tan 42}{\tan 42} = \frac{7.2}{\tan 42}$$

$$\boxed{x = 7.99 \text{ cm}}$$

Exercises pg. 82 #3-6, 9, 15